ILIADS
Creating a One-of-a-Kind Exploration Tool

About the Technology

The Integrated Lunar Information Architecture for Decision Support (ILIADS) is an extensible, model-based Geospatial Information System (GIS) that will give NASA mission planners easy access to both geographic and environmental data and the analytical tools needed to more effectively carry out the Vision for Space Exploration.

With this software tool, NASA mission planners will be able to retrieve satellite and other scientific data, create visualizations, and conduct "what-if" analyses to select potential robotic landing and crew habitat sites in the near term. ILIADS also will allow planners to plan and direct crew activities when the Agency establishes permanent outposts later next decade.

Significance of the Technology

Prior to ILIADS's development, NASA did not have an integrated tool suite that made important lunar geographic and environmental data immediately available to mission planners. With ILIADS, however, the information and analytical tools are all combined in one intuitive application that runs on major computer operating systems. As a result, ILIADS significantly improves access to critical information that NASA mission planners will need to safely and efficiently implement the Vision for Space Exploration.

See reverse side

Below: This is a sample of the type of data that ILIADS will make available to mission planners.
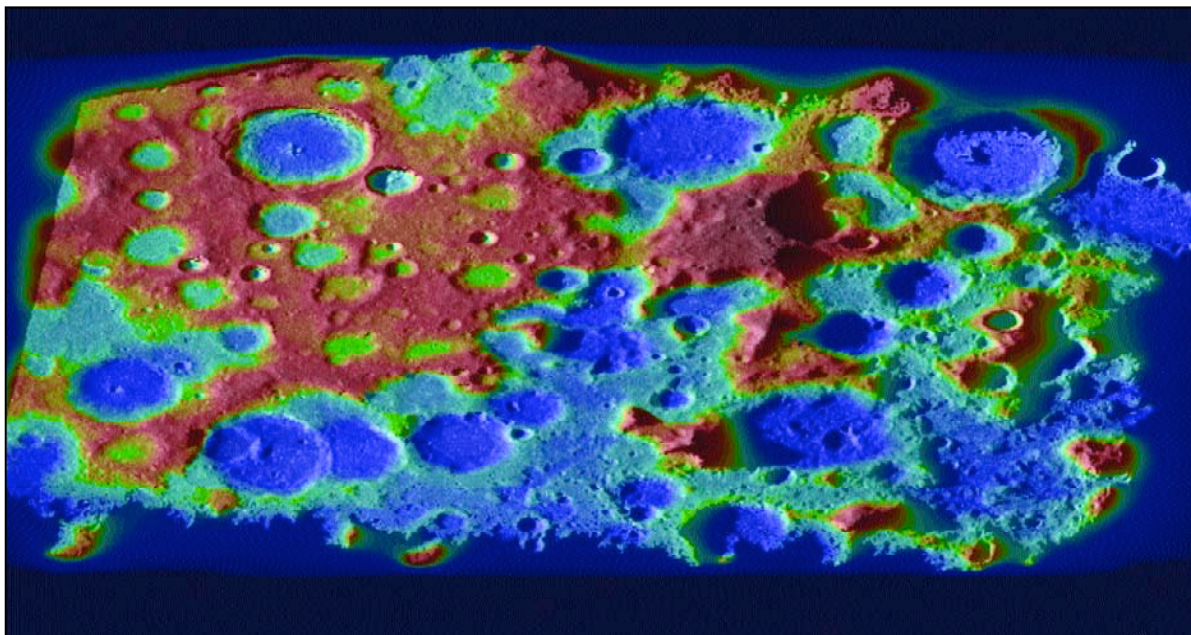
goddard technology

ILIADS

Benefits of the Technology: At-A-Glance

◆ Allows mission planners to easily apply scientific data gathered from remote-sensing satellites and other sources to select potential landing and habitat sites.

◆ Allows mission engineers to view and compare multiple data products and models to conduct "what-if" scenarios to optimize system and element design.

◆ Permits mission operators to quickly and intuitively understand the lunar environment to help them plan and make decisions.

◆ Fosters community collaboration by allowing its users to develop and share "plug-and-play" extensions (tools, models, and datasets).

Technology Origins

Using internal R&D funding, Goddard technologists developed an open, extensible core framework to give users access to three-dimensional lunar crater scenes, topographic contour maps, surface distance and elevation measurements, in situ resource and hazard thematic maps, and other useful datasets. ILIADS includes three primary components that operate on all major computer operating systems and together give ILIADS its one-of-kind capabilities:

◆ **ILIADS Spatial Database:** This will run on a server and house validated, controlled lunar data sets. The database serves as a spatial reference to primary lunar archives, such as the Planetary Data System.

◆ **ILIADS XGIS (eXploration Geographical Information System):** This provides lunar data visualization and analytical tools and models needed to analyze data. As an "open source" application, users may download and install the application on their desktop computers without paying a license fee.

◆ **ILIADS Lunar Exploration and Analysis Portal (LEAP):** With this on-line portal, scientists and engineers may post the availability of a new product, model, or tool and share it with others, provided it conforms to ILIADS standards. This capability fosters greater collaboration among engineers and scientists.

Enhanced Capabilities

Goddard technologists, in a partnership with United Space Alliance (USA), are integrating ILIADS

with USA's Questus™ mission-planning tool suite that the company is developing for future exploration mission operations. The addition of ILIADS capabilities will allow NASA exploration mission planners using Questus™ to efficiently and safely direct astronaut EVAs and lunar sortie activities when NASA establishes permanent human outposts on the Moon.

Looking Ahead

Goddard technologists expect to complete the integration in time for the Lunar Reconnaissance Orbiter (LRO), a Goddard-led mission that will spend a year mapping the Moon after its launch in 2008. With the new capability, exploration mission planners will have intuitive access to LRO and other lunar data, which they then can use to plan and carry out subsequent missions to the Moon, including crewed lunar operations.

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FS-2008-10-101-GSFC (TT#5)